



Air Quality Permitting Statement of Basis

June 20, 2007

Permit to Construct No. P-2007.0052

**Glanbia Foods, Inc., Gooding Facility
Gooding, ID**

Facility ID No. 047-00008

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PROPOSED FOR PUBLIC COMMENT

Table of Contents

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURES	3
1. PURPOSE	4
2. FACILITY DESCRIPTION.....	4
3. FACILITY / AREA CLASSIFICATION	4
4. APPLICATION SCOPE	4
5. PERMIT ANALYSIS	5
6. PERMIT FEES.....	9
7. PERMIT REVIEW.....	9
8. RECOMMENDATION	9
9. AIRS INFORMATION.....	9
10. APPENDIX MERGED PARAMETERS FOR MULTIPLE STACKS	11

Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic foot per minute
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
cfm	cubic foot per minute
cms	cubic meter per second
DEQ	Department of Environmental Quality
EI	emissions inventory
g/s	gram per second
Glanbia	Glanbia Foods, Inc., Gooding
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
m/s	meter per second
MMBtu/hr	million British thermal units per hour
NAAQS	national ambient air quality standard
NAICS	the North American Industry Classification System
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO ₂	sulfur dioxide
T/yr	tons per year
ug/m ³	micrograms per cubic meter
UTM	Universal Transverse Mercator

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Glanbia Foods, Inc. (Glanbia) operates a facility near Gooding that manufactures cheese and whey dairy-based products from raw milk.

3. FACILITY / AREA CLASSIFICATION

This facility is not a major facility as defined in IDAPA 58.01.01.205, because its potential to emit is limited to less than the applicable major source trigger (i.e., 250 T/yr) for New Source Review program. The facility is not a designated facility as defined in IDAPA 58.01.01.006. The facility is not a major source as defined in IDAPA 58.01.01.008 for Title V program. The facility is subject to federal NSPS requirements in accordance with 40 CFR 60, Subpart Dc for four boilers. At this time, the facility is not subject to federal NESHAP requirements in accordance with 40 CFR 61 and 63. The Standard Industrial Classification (SIC) code defining the facility is 2022, *Natural, Processed, and Imitation Cheese*. The North American Industry Classification System (NAICS) defining the facility is 311513 *Cheese Manufacturing, and whey, raw, liquid, manufacturing*. The AIRS facility classification is "SM."

This facility is located within AQCR 63 and UTM zone 11. The facility is located in Gooding County which is classified as unclassifiable for all criteria air pollutants (i.e., PM₁₀, CO, NO_x, SO₂, lead, and ozone).

The AIRS information provided in this statement of basis defines the classification for each regulated air pollutant at Glanbia. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

Glanbia proposed to increase lactose production at their Gooding Facility. Glanbia requested a Permit to Construct (PTC) for the lactose production increase. Currently, the lactose production line does not have a PTC because DEQ exempted it on August 2, 1996.

Current lactose production line is being expanded by modifying and/or upgrading existing equipment. Specifically, the expansion involves upgrades to the evaporator, the addition of two crystallizing tanks and the replacement of part of the refining process. As a result, the material fed to the lactose dryer contains less moisture. The dryer can process more whey powder than it could previously.

4.1 Application Chronology

April 10, 2007	DEQ received the application.
April 19, 2007	DEQ issued 15-day pre-permit construction approval. It also served as application completeness letter.
June 8, 2007	DEQ issued a draft permit for the applicant review.
June 20, 2007	DEQ emailed the proposed permit to the facility.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this permitting action.

5.1 *Equipment Listing*

The equipment information was taken from July 29, 1996 DEQ's technical analysis, Glanbia's 1996 application form, or the PTC application for this permitting action.

Lactose Dryer

Manufacturer:	NIRO
Model:	Unknown
Design capacity:	6,626 lb/hr originally, increased to 7621 lb/hr
Rated heat input rate:	It is steam heated. Boiler room provides the steam.

Product recovery equipment:	Cyclone
Manufacturer:	NIRO
Model:	CHE3000
Recovery efficiency:	Unknown

Emissions control device:	Scrubber, SC 01 (following the cyclone in series to control whey powders)
Manufacturer:	NIRO/YORK
Model:	NIRO 4.18
Control Efficiency:	52%
Water Flow:	3.74 gallons per minute
Pressure Drop:	1.0 inch of water

Stack Information

Stack height:	84 feet
Stack diameter:	3.674 feet
Stack exhaust flowrate:	38,000 acfm
Stack exhaust temperature:	135 °F

Lactose Receiving Baghouse, BH 01 (It is process equipment.)

Manufacturer:	NIRO
Model:	400-12
Baghouse type:	16 oz. Polyester BAIF
Number of bags:	75
Product capture efficiency:	99.99%

Stack Information

Stack height:	84 feet
Stack diameter:	3.25 feet
Stack exhaust flowrate:	4,800 acfm
Stack exhaust temperature:	120 °F

5.2 Emissions Inventory

The emissions increase as a result of this permitting action was calculated and provided in the application. DEQ has reviewed the estimates. It appears to be conservative. Table 5.1 provides the emissions summary for the lactose scrubber and the lactose receiving baghouse.

A facility-wide emissions inventory (EI) was provided in the application for informational purposes. DEQ didn't review the facility-wide EI because 1) a detailed calculation was not provided in the application, and 2) it is not used in the permit analysis for this permitting action.

Table 5.1 SUMMARY OF EMISSION INCREASE AND TOTAL EMISSIONS FROM THE LACTOSE SCRUBBER AND LACTOSE BAGHOUSE ^a

Emissions Unit	PM ₁₀ , emissions increase from the unit		PM ₁₀ , total emissions from the unit	
	lb/hr	T/yr	lb/hr	T/yr
Lactose Dryer Scrubber, SC 01	0.66	2.9	5.04	22.10
Lactose Receiving Baghouse (Lactose Powder Receiver), BH 01	0.1	0.4	0.762	3.34
Total	0.76	3.3	5.80	25.44

^a Information taken from the spreadsheet submitted by the applicant through email on May 7, 2007.

5.3 Modeling

Conclusion

DEQ conducted a technical review of the submitted air quality analyses. The submitted modeling analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed facility or modification were below significant contribution levels; or b) that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. In conclusion, the ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the facility or modification will not cause or significantly contribute to a violation of any air quality standard.

Table 5.2 MODELING RESULTS ^a

SCREEN3 1- hr Averaging Concentration (µg/m ³)	Adjusted Averaging Period	SCREEN3 Persistence Factors	Estimated Ambient Concentration (µg/m ³)	Significant Contribution (µg/m ³)	Below Significant Contribution
9.69	24-Hour	0.4	3.876	5	Yes
	Annual	0.08	0.7752	1	Yes

^a revised modeling output was provided by the applicant through email on May 3, 2007.

Modeling Input

The regulatory, Huber-Snyder, downwash method assumes that the building can be approximated by a simple rectangular box, and includes wake effects using automated distance array or discrete distance options. The Huber-Snyder method also includes cavity calculations for two building orientations; first with the minimal horizontal building dimension along the wind direction, and second with the maximum horizontal dimension along the wind direction. The applicant chose to run the Huber-Snyder method for building downwash.

The lactose scrubber stack and lactose baghouse stack are located on the same roof tier within approximately 30 to 40 feet of one another. Stack parameters and corresponding emission rates from the lactose scrubber and lactose baghouse were used to evaluate the lowest value of M (Merged Parameters for Multiple Stacks) as a representative stack. SCREEN3 modeling was performed using a combined emissions rate for PM through a single representative stack. Merged Parameters for Multiple Stacks,

page 2-3, Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised, USEPA, October 1992 is included in Appendix. Table 5.3 lists the values of M. Table 5.4 lists the modeling input.

Table 5.3 MERGED PARAMETERS FOR MULTIPLE STACKS (M)^a

Stack Height, hs (m)	Stack Height, hs (meter)	Stack Gas Flow (cfm)	Stack Gas Flow (cms)	Temp (Deg K)	Emission Rate-Q (g/s)	M
Lactose Scrubber	25.6	38,000	17.93	330.37	0.083	1,827,662
Lactose Baghouse	25.6	4,800	2.27	322.04	0.013	1,489,692

- Taken from submittal provided by the applicant through email on May 3, 2007.
- Note: $M = hs * flow * temp / Q$
- Lowest M is used for combined stack emissions

Table 5.4 MODEL INPUT^a

Parameters	Values
Emission Rate	0.096 g/s or 0.76 lb/hr
Stack Height	25.6 meters or 84 feet
Stack Inside Diameter	0.99 meters or 3.25 feet
Stack Exit Velocity	2.9429 m/s
Stack Gas Exit Temperature	322.0400 K or 120 °F
Ambient Air Temperature	293.0000 K
Receptor Height	0.0000 meters
Urban/Rural Option	Rural
Building Height	12.5000 meters or 41 feet
Minimum Horizontal Building Dimension	45.7300 meters or 150 feet
Maximum Horizontal Building Dimension	45.7300 meters or 150 feet

^a data taken from SCREEN3 modeling output submitted by applicant on May 3, 2007 through email.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this permitting action.

IDAPA 58.01.01.201.....Permit to Construct Required

Glanbia proposed to increase the lactose production at their Gooding facility. The lactose production increase causes an emissions increase from the lactose scrubber and lactose receiving baghouse. The proposed project does not qualify for an exemption under Sections 220 through 223 of the Rules; therefore, a PTC is required.

IDAPA 58.01.01.203.....Permit Requirements for New and Modified Stationary Sources

The facility has demonstrated compliance, to DEQ's satisfaction, that this project will not cause or significantly contribute to a violation of any ambient air quality standards of PM₁₀. No toxic emissions are associated with this project.

IDAPA 58.01.01.701.....New Equipment Process Weight Limitations

The calculation provided in the application indicates that the lactose production line is in compliance with this requirement. No specific monitoring is required as long as the facility operates the lactose scrubber and the lactose receiving baghouse in accordance with the requirements in the permit.

5.5 Permit Conditions Review

This section describes only those permit conditions that have been revised, modified or deleted as a result of this permitting action. All other permit conditions remain unchanged.

- 5.5.1 SIC is corrected to be 2022.
- 5.5.2 Permit Condition 1.1 and 1.2 is re-written to state the purpose of this permitting action.
- 5.5.3 Table 1.1 is updated to include the lactose production line.
- 5.5.4 Section 4 of the PTC is a new section that includes permit conditions applicable to the lactose production line.
- 5.5.5 Permit Conditions 4.1 and 4.2 describe the lactose production line process and its emissions control.
- 5.5.6 Permit Condition 4.3 establishes the PM₁₀ emissions limit for the lactose dryer scrubber. To correspond to the time period of the 24-hour PM₁₀ NAAQS, a calendar day PM₁₀ limit is used in the permit. An annual emissions limit is not necessary because it is inherently limited by the daily limit.

The PM₁₀ emissions are estimated using the proposed production rate (i.e., 7,621 lb dry solids per hour), the air flowrate through the scrubber, and the manufacturer's grain loading limit for the scrubber. The estimated PM₁₀ emissions rate is 5.04 lb/hr as provided in the application.

To verify the estimated emissions rate at the proposed production rate, to develop/verify the operating value of the scrubbing media flow rate, to demonstrate compliance with the limit in Permit Condition 4.3, and to address public concerns on the lactose production increase, Permit Condition 4.8 requires the permittee to a conduct performance source test.

To ensure continuous compliance with the emissions limit, 1) Permit Condition 4.5 specifies the operation requirements of the lactose scrubber; 2) Permit Condition 4.8 specifies the parameter monitoring of the lactose scrubber; and 3) Permit Condition 4.9 specifies the scrubber maintenance requirements. Per information in the 1996 application, the pressure drop of the scrubber is one inch of water. With such a low pressure drop of the scrubber, it appears the scrubber more likely to be a spray chamber type of scrubber than a venturi scrubber. The monitoring of the pressure drop across the scrubber is not required in the permit because it doesn't appear to be critical to the performance of the scrubber to control the particulate as long as the permittee operates the scrubber in accordance with manufacturer's recommendations.

For Permit Condition 4.8, if the permittee has more then one monitor datum of that week, the minimum scrubbing media flowrate monitored will be used to compare to the minimum value set in the permit.

An emissions limit for the baghouse is not necessary because 1) the baghouse is the process equipment receiving whey powder - the product, it is in the permittee's best interest to operate the baghouse as efficiently as possible; and 2) the emissions from the baghouse are low – 0.76 lb/hr.

- 5.5.7 Permit Condition 4.4 specifies the opacity limit of lactose dryer scrubber stack, lactose receiving baghouse stack, and their associated openings.

To ensure compliance with the opacity limit, 1) Permit Conditions 4.5, 4.7, 4.8, and 4.9 specify the requirements for lactose dryer scrubber operation, parameter monitoring, performance test, and maintenance; 2) Permit Condition 4.6 specifies the lactose receiving baghouse inspection and maintenance requirements; and 3) Permit Condition 4.10 requires a quarterly see/no see visible emissions inspection.

- 5.5.8 Permit Condition 4.11 specifies the recordkeeping requirements.
- 5.5.9 Table 5.1 is revised to add the emissions limit for the lactose dryer scrubber.

6. PERMIT FEES

Glanbia submitted a \$1,000 PTC application fee on April 10, 2007, in accordance with IDAPA 58.01.01.224. Glanbia's emissions increase is within one to 10 tons range. In accordance with IDAPA 58.01.01.225, the PTC processing fee is \$2,500.

Table 6.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	3.3	0	3.3
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	3.3
Fee Due	\$ 2,500.00		

7. PERMIT REVIEW

7.1 *Regional Review of Draft Permit*

The draft permit was made available for Twin Falls Regional Office review on June 5, 2007. The comments were received on June 8, 2007. The comments related to this permitting action were addressed in the permit.

7.2 *Facility Review of Draft Permit*

The draft permit was provided for facility review on June 8, 2007. The comments were received on June 15, 2007. Comments on Permit Condition 4.7 were addressed in the permit. Comments on Permit Conditions 4.2, 4.4, 4.5.3, and table 1.1 were not addressed because the requested changes were not allowed by IDAPA 58.01.01.

7.3 *Public Comment*

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. A request for a public comment period was received. A 30-day public comment period will be provided in accordance with IDAPA 58.01.01.209.01.c.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Glanbia be issued a proposed PTC No. P-2007.0052 for public comment for the production increase of lactose process line at their Gooding Facility.

9. AIRS INFORMATION

The AIRS does not require updating, because there are no changes to the facility's classification, no changes to the applicability of the regulations, and no changes to the area classification.

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: Glanbia Foods, Inc.

Facility Location: Gooding

AIRS Number: 047-00008

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO ₂	SM		SM				SM	U
NO _x	B							U
CO	B							U
PM ₁₀	B							U
PT (Particulate)	B							
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			Dc					

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

SYC Permit No. P-2007.0052

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Appendix

**Merged Parameters for Multiple Stacks, Page 2-3, Screening
Procedures for Estimating the Air Quality Impact of Stationary
Sources, Revised, USEPA, October 1992**

P-2007.0052

2.2 Merged Parameters for Multiple Stacks

Sources that emit the same pollutant from several stacks with similar parameters that are within about 100 meters of each other may be analyzed by treating all of the emissions as coming from a single representative stack. For each stack compute the parameter M:

$$M = (h_s V T_s) / Q \quad (2.1)$$

where M = merged stack parameter which accounts for the relative influence of stack height, plume rise, and emission rate on concentrations

h_s = stack height (m)

$V = (\pi/4) d_s^2 v_s$ = stack gas volume flow rate (m^3/s)

d_s = inside stack diameter (m)

v_s = stack gas exit velocity (m/s)

T_s = stack gas exit temperature (K)

Q = pollutant emission rate (g/s)

The stack that has the lowest value of M is used as a "representative" stack. Then the sum of the emissions from all stacks is assumed to be emitted from the representative stack; i.e., the equivalent source is characterized by h_{s1} , V_1 , T_{s1} and Q , where subscript 1 indicates the representative stack and $Q = Q_1 + Q_2 + \dots + Q_n$.

The parameters from dissimilar stacks should be merged with caution. For example, if the stacks are located more than about 100 meters apart, or if stack heights, volume flow rates, or stack gas exit temperatures differ by more than about 20 percent, the resulting estimates of concentrations due to the merged stack procedure may be unacceptably high.